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THESIS

**THE EFFECT OF PAYSCALE CAPS ON MARINE MUSTANG
OFFICERS AND RETIREMENT**

by

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March 2008

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**THE EFFECT OF PAYSCALE CAPS ON MARINE MUSTANG OFFICERS AND
RETIREMENT**

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Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

This research analyzed prior enlisted Marine Officer Retention and their relationship to military paycaps. An analysis of the data showed that retention behavior of prior-enlisted Marine Officers differs from non-prior Marine Officers. Prior-enlisted Marine Officers are more likely to remain on active duty after their initial service obligation and serve a full career in the Marine Corps than Marine Officers with no previous military experience. Prior-enlisted service has a positive effect on retention to 20 YOS. A Marine Officer with sufficient time in service stops receiving longevity pay, and experiences the phenomenon known as pay compression. The lack of pay raises for six years or longer may be a disincentive to continued service, although prior-enlisted Marine Officers have higher retention rates than non-priors at every stage of their careers. The results of this study suggests that Mustang or prior-enlisted Marine Officers with at least 8 years of prior service retire at a higher rate than regular officers after 20 YOS.

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I dedicate this thesis in the memory of my late grandfather, Paul.

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I. INTRODUCTION AND BACKGROUND

A. INTRODUCTION

Under the mandate of the National Defense Authorization Act of Fiscal Year 2008 (section 403), the Marines Corps is currently expanding its force structure. Presumably, more field-grade officers will be required to fill that expansion. This call for expansion requires more officers to be commissioned via the normal sources of commissioning: the United States Naval Academy, Naval Reserve Officer Training Corps (NROTC) units, Officer Candidate Course (OCC) and Platoon Leadership Course (PLC), as well as enlisted source commissioning programs such as the Marine Enlisted Commissioning Education Program, the Enlisted Commissioning Program, and the Meritorious Commissioning Program.

B. BACKGROUND

Although Marines leave the corps for various reasons, some individuals decide to pursue a career as a Marine Officer and look toward retirement some time into the future. Prior-enlisted Marines (known as "Mustangs"), especially those commissioned through these special programs, must have at least ten years of commissioned service before becoming retirement eligible. At some point in their career, Marines volunteer to retire and leave the military to work another job while collecting retirement pay to maximize earnings, while others choose to continue their service to the Corps.

1. The Military Active Duty Retirement System

Currently there are two different types of retirement plans in existence for active duty Marines: the High-3 Year Average retirement plan and the Career Status Bonus (CSB)/REDUX retirement plan. Only Marines who have entered after 01 August 1986 may select the CSB/REDUX retirement plan. Marines who entered the Corps before 01 August 1986 fall under the High-3 Year Average retirement plan. Once a career Marine reaches 15 years of active duty service, he or she will have to choose one of the two retirement plans.

Marines who retire with 20 years of service under the High-3 Average plan will receive 50 percent of their highest three-year average of base pay and an annual cost of living adjustment (COLA) based on the Consumer Price Index (CPI) for the remainder of their life. For each additional year of service past 20 YOS, the multiplier increases by 2.5% until that Marine reaches High Tenure (30 years of service). At 30 years of service (YOS) the multiplier reaches its maximum of 75% of base pay. Marines who choose the CSB/REDUX retirement plan at their 15th year of service will receive the Career Status Bonus (\$30,000) and incur a 20-year obligation to the military. Acceptance of the CSB/REDUX plan reduces the highest three-year average base pay multiplier from 50% to 40%. These retirees will receive an annual COLA adjustment for the remainder of their life. Each additional year of service past 20 YOS increases the multiplier by 3.5% until the Marine reach High Tenure (30 YOS maximum service). At 30 years of service the multiplier reaches a maximum of 75% of base pay.

2. The Payscale Cap

Most service members receive biannual pay raises; however, prior-enlisted Marines encounter a pay cap later in their career. A Marine Officer with sufficient time in service stops receiving longevity pay, and experiences the phenomenon known as pay compression. The only pay raise of any kind that a prior-enlisted Marine can expect at that point is an annual Cost of Living Allowance (COLA), dependent on the actions of Congress and the President, that is intended to keep salaries in pace with inflation. Pay compression affects all officer grades from O-3E to O-7 starting at 18 years of service, and grades O-8 to O-10 at 26 years of service. In Table 1 the cells with dark borders indicate where the pay cap affects Marines according to their pay grade and total years in service.

Table 1. 2008 Officer Base Pay Table

BASIC PAY—EFFECTIVE JANUARY 1, 2008													
Pay Grade	Over 14	Over 16	Over 18	Over 20	Over 22	Over 24	Over 26	Over 28	Over 30	Over 32	Over 34	Over 36	Over 38
O-10				14,137.20	14,206.20	14,501.70	15,016.50	15,016.50	15,767.10	15,767.10	16,555.50	16,555.50	17,383.20
O-9				12,364.80	12,542.70	13,249.20	13,249.20	13,249.20	13,911.90	13,911.90	14,607.60	14,607.60	
O-8	10,488.90	10,813.50	11,282.40	11,715.30	10,594.20	12,004.20	12,004.20	12,004.20	12,304.50	12,304.50	12,612.30	12,612.30	
O-7	9,105.00	9,912.30	10,854.20	10,594.20	8,914.50	10,594.20	10,647.90	10,647.90	10,860.90				
O-6	7,016.40	7,683.60	8,075.10	8,466.30	8,688.90	8,914.50	9,351.90	9,351.90	9,538.80				
O-5	6,596.40	7,013.70	7,212.00	7,408.50	7,631.10								
O-4	6,288.90	6,404.10	6,471.00										
O-3	5,543.40	5,543.40	5,543.40										
O-2	4,074.30												
O-1	3,215.10												
O-3E	5,625.60	5,748.60	5,916.00										
O-2E	4,718.40	4,718.40	4,718.40										
O-1E	3,992.40	3,992.40	3,992.40										
Note:	1. All ellipses denote pay cap.												
	2. O-1 & O-2 pay were capped at 3 YOS and 6 YOS respectively												
(Source: Defense Department)													

For example, a Marine Corps Captain (Paygrade O-3E) will have reached the maximum on the military pay schedule after 18 years of service and would have to wait until the promotion to the next pay grade, the rank of Major (O-4), to receive an actual pay raise. At that point the Marine would have once again reached the maximum on his or her pay schedule, and would not see another non-COLA pay raise until the promotion to Lieutenant Colonel (O-5). The wait for selection and promotion to Lt. Col. could take an additional 6 to 7 years and there is no guarantee of promotion.

To bear such a risk and not be promoted alongside their peers would presumably be a huge dissatisfier to career Marine Officers. As a result of the "up and out" policy created by the Defense Officer Personnel Management Act of 1980 (DOPMA), a determined Marine Officer who was not promoted to Lt. Col. at the first opportunity could wait until being passed over by a second Lt. Col. (O-5) selection board one year later before being forced into retirement. A "twice-passed-over" Marine can appeal to the Continuation Board to remain on active duty; however, Continuation Boards are "convened based on the needs of the Marine Corps and criteria [vary] from year to year." (MARADMIN 187/07, 2007)

On the other hand, if a prior-enlisted Marine is promoted to Lieutenant Colonel after 26 to 27 years of service, the Marine will only have one tour and very few career opportunities remaining before reaching High Tenure. The prospects of remaining on active duty past 26 years of service would diminish considerably for that career Marine. The fact of no pay raise for six years or longer, coupled with the risk of not getting promoted and having no future

career, could be a major disincentive to continue service for a Mustang on track for retirement.

Nevertheless, once an individual Marine Officer is eligible for retirement, he or she will have to make a career decision based on personal considerations. It is reasonable to suggest that when an individual has no more prospects of future pay raise and expects to collect a pension with retirement benefits (commissary and exchange privileges, TRICARE for life, etc.), that the individual may elect to leave the Marine Corps. Although it is difficult to predict each individual's discount rate and ascertain the reason for continuation or retirement, one can compare the rate at which normal Marine Officers retire against that for Marine Officers who have reached the pay cap at the point of retirement eligibility and determine if the pay cap might be one factor that drives Mustang (prior-enlisted) Officers to retire.

C. PURPOSE

The purpose of this research is to identify whether the capped military pay scale influences Marine Officers to retire after 20 years of service. For this study, "prior enlisted service" or "Mustang" refers to individuals with at least 4 years of active service as an enlisted member of the armed forces and who are eligible for the special base pay rate (O-1E to O-3E). This study will assist Marine Corps policymakers (HQMC Manpower and Reserve Affairs) in predicting Marine Mustang Officers' retirement behavior. It will serve as an example for Marine Corps officials to seek and implement policy alternatives in order to adjust for the effects of a capped military pay scale on officer retention.

II. LITERATURE REVIEW

A. CIVILIAN TURNOVER

Labor economists define the constant flux of people entering and leaving work from an organization as employee turnover. Generally, turnover is described as consisting of voluntary or involuntary separation. Voluntary separation is where an individual employee quits, resigns, or ceases his or her relationship with an organization. Involuntary separation is where the organization severs employment ties with the worker in the form of a "layoff" or direct firing. This research and literature review focuses on voluntary separation and its determinants.

Civilian labor turnover produces one of the highest economic burdens for institutions. Initially, the immediate deficiency of personnel decreases productivity and is results in costs for an organization. The additional cost of replacement saps the organization of more limited resources. "Replacement costs may be broken down into recruitment costs, selection and placement costs, on-the-job-costs, and separation costs." (Gaudet, p39) The formal training and time invested in employees costs money, and companies view the shortfall of an employee before they maximize their return-on-investment as an additional loss of resources.

Job turnover is usually costly and detrimental to the organization. A logical step in this direction is to identify the factors which correlate with turnover and thereby provide a focus for the efforts of organizational planners and personnel managers in reducing the rate of

attrition. From a theoretical standpoint, turnover represents an individual level decision which is the result of individual, organizational, and external environmental factors. (Shanahan, p. 1)

Although people work or quit working for different reasons, industrialist psychologists believe that these behaviors and factors can be identified as motivation and categorized as intrinsic or extrinsic values (a belief known as *Expectancy Theory*).

1. Intrinsic Motivation

Generally, intrinsic refers to the psychological rewards that individuals seek gain to satisfy psychological needs (whether social or self-fulfillment). In the case of this study, individuals receive psychological rewards from belonging to an organization. These psychological rewards influence the feelings and attitudes of an individual. An individual may derive prestige or fulfillment from belonging to an organization or may enjoy the social camaraderie of fellow members. If the organization treats its members positively or has a positive atmosphere and environment, its members receive psychological gratification. Conversely, the psychological response and level of activity would decrease if the individual perceives a negative reward.

In the workplace, these intrinsic values are called *intrinsic motivation*. According to Industrial Psychologists Tiffin and McCormick, intrinsic motivation is "related to the task itself" and suggests that "there is some direct relationship between task and the goal of the learner, such as in the case of a mechanic who achieves satisfaction from

a job well done." (Tiffin and McCormick, p. 277) Intrinsic motivation in the workplace leads to job satisfaction, "a person's attitude regarding his or her job and work content." (McShane and Von Glinow, p. 75) Social psychologists suggest that work behavior, performance, and organizational commitment are tied to job satisfaction. Psychologists classify the positive and negative psychological reactions as *satisfiers* and *dissatisfiers*.

Satisfiers are positive "factors associated with work activities such as advancement, recognition, responsibility, the work itself, and etc." whereas dissatisfiers are "unsatisfactory conditions related to such factors." (Tiffin and McCormick, p. 352) Social psychologists point out that "people gravitate to work situations that meet their needs, and as a result their overall job satisfaction goes up." (Lawler and Worley, p. 243) Dissatisfaction within the work environment may induce poor work behavior, apathy, or a lack of commitment. Lawler and Worley state that "when employers are dissatisfied with their jobs, they are saying that they do not see positive consequences associated with remaining part of the organization as it presently operates" and they "typically begin to look for employment and leave if they find a situation that offers a better mix of rewards." (Lawler and Worley, p. 243)

Policymakers must be cautious with labeling all employees that quit working as disgruntled. Sociologist James Price recognizes that "not all individuals who leave are dissatisfied, and not all dissatisfied members leave." (Price, p. 6) Individuals may depart an organization due to family or other personal reasons, not necessarily as a

reaction to the work environment. Although the influence of intrinsic values may be strong, it does not always necessarily override the weight of extrinsic motivation. Sociologist Geoffrey Ingham discovered that motivation factors vary for workers of different skills and different sized organizations. His findings indicate that workers "choose to maximize their earnings" at larger factories tending to "deflate their non-economic awards" whereas some workers choose "interesting work" over higher wages. (Ingham, p. 91 & 110) Nevertheless, job satisfaction is a personal matter.

2. Extrinsic Motivation

Extrinsic values are external influences on an individual. Extrinsic motivation is the desire to obtain rewards or benefits in belonging to an organization. The individual may be given an award, commendation, or pay in recognition of performance or promised an incentive to remain within an organization. In the workplace, these rewards are commendations (medals, trophies, certificates, plaques & etc.), fringe benefits (tickets to sporting events, free parking, travel vouchers, preferred club membership and etc.), vacation/sick leave, or financial in nature (extra pay, bonuses, awarded stock options and etc.).

Extrinsic motivators can be effective in recruiting and retaining employees. Social psychologists reveal that "individuals vary significantly in terms of what they consider valuable, attaching different degrees of importance to such rewards as money, recognition from a supervisor, and a ride on a mechanical bull." (Lawler and Worley, p. 239). Price argues that pay is a great motivator in obtaining

commitment to an organization. He believes that "successively higher amounts of pay will probably produce successively lower amounts of turnover." (Price, p. 68)

Overall, "individuals look for those aspects of jobs which are related to their own value systems, some place greater value on, say, security others on income, others on type of work, etc." (Tiffin and McCormick, p. 358) Yet, although people's value systems differ from one another, "there sometimes is at least a moderate consistency in the values of individuals within certain groups." (Tiffin and McCormick, p. 358) It is through the research of military turnover that we can recognize this "individual/group consistency" and the behavioral influence on officer retention.

Table 2. Consequences of Turnover for Individuals

Level of Analysis	Possible consequences		Potential moderating variables		
	Positive	Negative			
Leavers	Increased earnings (2,4)	Loss of seniority (1)	1. Tenure		
	Career advancement (2,4)	Loss of nonvested benefits (1)	2. Labor market		
	Improved individual-job match (6)	Unreimbursed moving costs (2,6)	3. Family status		
	Increased challenge (6)	Disruption of family (2,6)	4. Job skills/abilities		
	Self-development (6)	Transition stress (3,6)	5. Social involvement in work		
	Nonwork benefits (e.g., geographic location (6)	Loss of friendships (5)	6. Characteristics of old versus new job		
	Increased family ties (3,6)	Decreased family ties (3,6)			
	New social relationships (5)				
	Enhanced commitment to new job and organization (6)				
Stayers	Opportunities for promotion (8,9)	Increased workload (3,5,6,9)	1. Beliefs about why others leave		
	More positive job attitudes (1,4,7,9)	Decreased performance (3,5,6,9)	2. Social relationship to leavers		
	Increased performance	Stress and uncertainty (6,9)	3. Task interdependence		
	Stimulation at work (2,9)	Less positive job attitudes (1,4)	4. Status of leaver		
	Initiation of search that results in better job (1,6,7)	Loss of friendships (2)	5. Performance of leaver		
			6. Job market conditions		
			7. Career orientation of stayer		
			8. Level in organization of leaver		
			9. Organization promotion policies		
Note: The numbers following each sequence refer to potential moderating thought to be most closely associated with that sequence.					
(Source: From Mowday et al., 1982)					

B. MILITARY TURNOVER (OFFICER RETENTION)

The causes for civilian turnover and military turnover are quite similar. Job satisfiers and other motivations are not unique to civilians; the same identifiers and determinants are seen throughout military surveys. Extrinsic motivators that influence Marine Officers to remain on active duty include fringe benefits, world travel, leadership opportunities, training and professional education. After the initial obligation period, some Marine Officers voluntarily leave due to their failure to adapt to the organizational culture. Where some Marine Officers discover dissatisfiers in multiple deployments and a high workload, other Marines feel challenged and make a conscious choice to make it a career, at least until their values change or they become retirement eligible.

As with the civilian sector, it is universally accepted that "the more training and experience an individual Marine Officer receives, the greater the investment for the Marine Corps" and that "the individual officer becomes more costly to replace." (Theilmann, p. 2) Beyond their initial obligation, Marine Officers decide whether to stay or leave active duty. Ideally, the Marine Corps should seek to maximize its return on investment in Marine Officers through their retention for a full 30 years of service, the maximum length of service permissible, for a more robust officer corps. In preventing the loss of a Marine Officer, the Marine Corps strengthens the officer corps and retains corporate knowledge.

1. Study by Theilmann (1990)

Theilmann attempted to determine the factors that convinced junior Marine Officers to remain on active duty after serving their initial service obligation. Additionally, he tried to examine if these factors are dissimilar for Marines in different occupations. By predicting company grade officers' behavior, policymakers can forecast cycles and plan for manpower losses.

The literature review provided an overview of research on both civilian and military turnover. The study used data from a survey, the *1985 Department of Defense Survey of Officer and Enlisted Personnel*, and data gathered by the Defense Manpower Data Center. Theilmann used only the data concerning male company-grade Marines and discarded the rest. With a sample size of 456 observations, the author used a binary logit regression to analyze the effects on officer retention of a multitude of factors that included demographic traits, tenure, primary MOS, cognitive traits, commissioning source, marital and dependent status, perception of job opportunities, retirement benefits, government housing, community outlook, and intrinsic and extrinsic attitudes.

The findings indicate that "the factors that strongly influence male, junior officers to remain on active duty beyond their initial service obligation are their commissioning source, marital/dependent status, military occupational specialty, race, and intrinsic and extrinsic job satisfaction factors." (Theilmann, p. 49) Theilmann discovered that being commissioned through ROTC and USNA had a positive effect on officer retention in comparison to

OCC/PLC. To Theilmann's surprise he learned that ROTC had a greater positive effect than the Naval Academy on retention. Married officers with children and officers serving in combat roles favored staying in the Marine Corps more than others. Minority officers chose the military over civilian work when compared to whites.

Although the data showed that intrinsic values held a slightly larger positive impact over extrinsic on behavior predictability of Marine Officers, they both weighed heavily on an individual's decisions to stay military. The following table shows those extrinsic and intrinsic values that had the most positive effect from Theilmann's thesis study.

Table 3. Theilmann's Job Satisfaction Component

<u>INTRINSIC</u>	<u>EXTRINSIC</u>
SATISFACTION WITH CO-WORKERS	SATISFACTION WITH PROMOTIONS
HAPPY WITH JOB	JOB SECURITY
FRIENDSHIPS	JOB TRAINING/IN-SERVICE EDUCATION
SATISFACTION WITH WORK CONDITIONS	VEAP BENEFITS/POST SERVICE EDUCATION
PERSONAL FREEDOM	COMMISSARY SERVICES
OPPORTUNITY TO SERVE COUNTRY	PAY AND ALLOWANCES

(Source: From Theilmann, 1990)

2. Study by Zinner (1997)

Zinner tried to identify the turnover factors that drive junior Marine officers to either remain or leave

military service. Additionally, he examined whether the influences of retention behavior were different between single and married Marine officers. The literature review and research mirrors that conducted by Theilmann. However, in addition to extrinsic and intrinsic values, Zinner focused on the personal concerns such as individual's intent, civilian opportunities, force structure reduction, and military experience and job skills applicable in the civilian job market.

Zinner utilized data assembled from the *1992 Department of Defense Survey of Officers and Enlisted Personnel and Their Spouses* and the applicants' Master Loss File. In merging the two files, he determined whether the officer's response to the survey and their intent actually correlated with their actions. After focusing on junior grade male officers with fewer than seven years of service, further restrictions reduced the data to 779 individual observations as the sample size. The author analyzed the effect of "personal information," "internal work-related" and "external related" influences on retention by using multivariate logistic regression. (Zinner, p. 29)

Zinner expected the variables married, commissioned through USNA or ROTC, possessing a combat or pilot/Naval Flight Officer role, or overall satisfied with military life (intrinsic and extrinsic values) to have a positive effect on the decision to remain on active duty. According to the findings, "the factors that influence significantly the members' decision to remain on active duty included: commissioning source; occupational specialty; deployment to Operation Desert Shield/Storm; satisfaction with various

intrinsic aspects of life in the Marine Corps; concerns with the force drawdown; whether or not the officer had searched for civilian employment in the last twelve months; and whether or not the officer believed that the skills he had acquired in the Marine Corps would be transferable to the civilian market." (Zinner, p. 78)

3. Study by Perry (2006)

Perry analyzed Marine officer occupations and their effects on retention at 10 years of commissioned service (YCS) and field-grade promotions. With a Marine Corps Commissioned Accession Career (MCCOAC) data set for FY1980 to FY1999, Perry created logistic retention models that tested the dependent variables "gender, marital status, ethnic group, commissioning age, commissioning fiscal year, prior enlisted, TBS class standing, [and] PMOS/occupational groups" on the propensity of the officer to remain for 10 YCS. (Perry, p. 59) He theorized that being married, having an older age at time of commissioning, commissioned through MECEP/MCP or USNA, being a pilot or having a combat PMOS would have a positive effect on remaining in the Marine Corps.

The findings show that out of all the Primary Military Occupational Specialties within the Marine Corps only pilots (with the exception of EA-6B and C-130 pilots) had higher retention than infantry (the base PMOS). Marine Officers in support related occupational specialties were more than likely to leave the Corps. Furthermore, the effect persists when the occupations are lumped together by their occupational field. "All PMOSs within the combat arms, ground support, and service support occupational fields have

a negative and significant effect on retention when compared to the base [PMOS]." (Perry, p. 68) The aviation PMOS (excluding the aviation support) had a positive association with retention, whereas all other occupations possess an association that is negative when compared to combat arms. This could be due to the increased obligation that comes with being a pilot. As expected, class standing at The Basic School has a positive effect and is indicative of higher performance throughout a career. Older-aged officers and those officers commissioned through MECEP/ECP are more than likely to remain in the Marine Corps until 10 years of commissioned service.

4. Study by Cakmak (2004)

The author examines the factors and personal characteristics that lead Marines to remain on active duty. Using combined data collected from the 1999 *United States Marine Corps Retention Survey* and individual workforce records, Cakmak divided the Marines into four categories: first-term enlisted males, first-term enlisted females, career enlisted males, and company-grade males. Although the survey examined 17,324 records, it gave a sample size of 332 junior grade male officers. The study eliminated individuals that had over 12 or fewer than 5 years of service, or were over 45 years old.

The author's retention model assessed the effects of "personal and military background, family status, pay and benefits, civilian opportunities, satisfaction with job and specific aspects of life in the military" on predicting behavior through multivariate logistic regression. (Cakmak, p. 41) Cakmak predicted that military housing, non-combat

arms occupation, years of service, USNA, and job satisfaction would have a positive effect on company-grade male officer retention. The study revealed several findings: (1) that the greater the opportunity for the transferable of skills to the civilian marketplace, the higher the probability the Marine officer will leave the Marine Corps; (2) officers who hunt for civilian jobs are indicating a strong intent to leave active duty; (3) living in government housing has a positive effect on retention; (4) married officers without children are more likely to depart from active duty than single officers, or married officers with dependents; (5) job satisfiers such as health benefits, work equity, and future career opportunities influence officer retention. (Cakmak, p. 70-72)

5. Study by Branigan (2001)

Some studies have theorized that individuals in possession of graduate education may be more productive than those without an advanced degree. However, there is a perceived notion within the Marine Corps that possession of a Master's Degree does not provide any benefits towards retention. An advanced degree leads Marine Officers to exit the service and pursue higher paying jobs. Branigan challenged this conception in his study on the effects of graduate education and the behavior of Marine officers.

In his "Accession Cohort Sample," Branigan collected data from multiple sources: Promotion Board data for In-zone population of Majors for FY98 to FY01 Lieutenant Colonel Promotion Boards (from the Manpower Plans Division at HQMC); Officer Cohort Data "Longitudinal TBS File" with commissioning data from 1979 to 1984 (from the Center for Naval Analysis);

Cohort Data with additional characteristics such as PME, marital status, and prior enlisted status (from both Defense Manpower Data Center West and Manpower Information and Performance Evaluation Divisions HQMC); and Graduation Data (from the Registrar Naval Postgraduate School).

Branigan created the following categories to test his theory: cognitive traits (NPS grad, Masters, GCT score), affective traits (served in combat, prior enlisted service, commissioning source, PMOS type), performance traits (TBS GPA, Awards, PME), career traits (unemployment rate, Fiscal Year in which the Marine Officer was in-zone for promotion board), and demographic traits. He expected officers with advanced degrees to have a greater advantage at promotion and higher propensity to remain on active duty than Marines without the higher education. With a sample size of 6,507 Marine Officers, Branigan ran a series of simple probit models (23 models) to estimate the effects and then subsequently ran a Chi-square test to determine if there were any changes across the Fiscal Years.

Overall, the results indicate "that officers with graduate degrees from any source... are all more likely to survive than officers without any [graduate] degree at all." (Branigan, p. 59) He also discovered that Marines with a successful career, who were married with dependents, pilots, or had combat experience had the tendency to remain in the Marine Corps until eligible for selection to Lieutenant Colonel (O-5). He notes that "the career-minded officer who chooses to participate in the Marine Corps' graduate

education programs can look forward to a long, secure career and anticipate a greater chance of promotion to O-5." (Branigan, p. 85)

6. Study by O'Brien (2002)

This study analyzed the effect of commissioning enlisted Marines to determine the predictability of their behavior. O'Brien argued that the Marine Corps could reduce attrition through the accession of high-quality enlisted Marines through commissioning programs. He tried to ascertain: 1) if those Marines stayed until their 10th year of service and 2) whether they remained on active duty until they satisfied retirement requirements.

The author used the *Marine Corps Commissioned Officer Accession Career* file gathered by the Personnel Management Division, Headquarters Marine Corps, Quantico, Virginia. This file is a combination of data collected from several sources (including The Basic School and Marine Corps Total Force Structure data files). Capturing twenty years of officer cohort data, O'Brian focused specifically on fiscal years 1980, 1983, 1986, and 1989. Due to the scarce number of females and MCP Marine Officers, the author dropped them from the data file.

After correcting for errors, O'Brien ran binary logit regressions for his two retention models on 5,172 observations. The retention models measured the effects of commissioning program, TBS class standing, GCT score, race/ethnicity group, marital status, and Primary MOS on the dependent variables (staying until 10 years of commissioned service, and staying until eligible for retirement). The

author anticipated that Marine Officers who fell into the category of white, commissioned through MECEP/ECP, married, or top in their class at TBS would likely remain on active duty. On the other hand, O'Brien expected individuals that were a minority, graduated at the bottom of their TBS class, or in a combat MOS to have the propensity to leave active duty.

The author discovered that the data supports his first hypothesis; that enlisted commissioning programs had a positive effect on remaining on active duty for 10 years in comparison to the other commissioning sources. However, to O'Brien's surprise the data showed that the commissioning source had no significant effect on predicting an "officer's retention-to-retirement" behavior. O'Brien believed that "the officers from MECEP provide a strong and stable mid-grade officer corps that can provide continuity to their respective occupational fields." (O'Brien, p. 58) Furthermore, he recommended that "the Marine Corps should assess more officers through this source this source to provide to provide flexibility to the commissioning source mix." (O'Brien, p. 58)

C. RETIREMENT DECISION

Although there have been a multitude of studies that examined retention of officers past their initial military obligation, very few research the social and financial factors, and behaviors that influence careerists (career Marines) to decide when they should retire. Of the studies that are available, most of them focus on the financial aspect that weighs on a careerist's decision-making. Although military careerists cannot predict their financial

needs with absolute certainty, income presumably has a strong influence on their decisions. All career Marines make the conscious choice to retire at some point within their career.

Careerists recognize that after retirement they are entitled to continue enjoying the fringe benefits they received while on active duty. These non-pecuniary benefits may no longer influence a careerist to remain on active duty since they will be available after retirement. Intrinsic motivation may no longer have a strong influence over career Marines as it had at the initial onset of their career.

For officers with dependents, some decisions are based on family needs: (1) economic stability, (2) no more deployments away from home, (3) more quality time with family, (4) and assistance in rearing of offspring. Careerists may encounter an increasing financial burden with children entering college when coupled with fewer wage increases. Most Marine Officers are young enough after twenty years of service to find a second career in the civilian marketplace.

1. Study by Lenz (1967)

Lenz believed that the Military Retirement System has a positive effect on retention until retirement eligibility; yet once an individual passes that point, other factors have stronger influences on their decision to remain in or leave military service. He developed a model to determine whether "the existing combination of active duty pay and retired military pay opportunities, when matched with civilian second career employment opportunities, provide financial

incentive toward continuation of military service beyond the minimum required for voluntary non-disability retirement". (Lenz, p. 18) His "wealth maximization hypothesis," he argues that as individuals near retirement, they seek to discover the optimum point, by which to retire in order to maximize their income. (Lenz, p. 18)

Lenz focused on the behavior of Naval and Marine Corps Officers in the pay-grades of 0-5 to 0-8 who retired between 1955 and 1964. He combined official military data with individual responses obtained from a mailed survey. The survey asked questions concerning their income and other factors. With a sample size of 4,230 retirees, Lenz conducted a statistical analysis of the officers' lifetime income to determine the effects of the financial incentives on retirement.

The findings indicated that the financial incentives had a negative effect on an extended career. The study revealed that "both retirement age and education level had a significant impact on the second-career earnings of members of the population." (Lenz, p. 145) The younger (earlier) a naval officer retires, the greater the job opportunity and potential income. Another finding showed that the longer one remains on active duty, "second-career income levels and employment rates decline." (Lenz, p. 199) Advanced degree holders "tend to retire at earlier ages than do the Bachelor degree holders and non-degree holders." (Lenz, p. 199) Individuals who held an advanced degree prior to retirement had a profound economic advantage in the civilian workforce over those without it (and slightly over those who earned

the degree post-retirement); yet, this effect decreases over time and is minimal at the full retirement age.

Additionally, Lenz learned that remaining on active duty does not fully maximize income: a 0-6 officer who retired involuntarily could earn a second-career income that rivals that of a 0-8 flag officer. Early retirement carries a risk to job security, whereas in this example the flag officer bears the risk of fewer job opportunities and less income in a second career.

Lenz also discovered that the "military retirement pay profile component values which decline with advancing age are a factor contributing to the general lack of financial incentive to an extended military career." (Lenz, p. 139) Earlier in the study, he stated that "a failure to offer subsequent longevity increases can, with some justification, be interpreted as an indication that the military organization is not interested in retaining those 0-5 and 0-6 officers who are not promoted to the next rank". (Lenz, p. 90) Given the payscale cap, any individual that desires to increase his or her cash flow would be influenced to look to another source, a second career in civilian employment. Overall, "in assessing the results produced by the model, there appeared to be a general lack of significant positive financial incentives for officers to remain on active duty for a maximum length military career." (Lenz, p. 200)

2. Study by Berkebile and Gaudi (1976)

As the eligibility point draws near, a careerist will have to decide whether they will retire at 20 or 30 years of service. Berkebile and Gaudi (1976) analyze the factors

that lead Naval Officers to retire. Berkebile and Gaudi proposed that not everyone fully weighs the risks involved with such a choice. Berkebile et al. recognized that "the prospect of leaving the military at such an early date will force the officer to face several major problems including: the standard of living he can expect after retirement, the transferability of his military skills to the civilian job market, the severity of the psychological adjustment from military to civilian life, and the possibility of a loss of economic and/or social status." (Berkebile, p. 12) They encouraged extensive retirement planning well in advance of a final decision being made. Berkebile focused on putting the risks and merits into tangible pecuniary form.

Berkebile and Gaudi used the present value of Naval Officer's (O-4 & O-5) retirement income as an example to show the effects of time on the value of money at two different discount (interest) rates. They hypothesized that individuals could calculate their retirement stream and determine how to maximize their overall income. Berkebile and Gaudi's findings indicated that a delay in retiring could lead to diminishing employment opportunities due to increased age and that the individual would be unable to maximize his or her income. The study did not specify the most favorable point for retirement; this is subject to the Naval Officer's economic position.

Berkebile and Gaudi proposed the use of a broader equation that would take into account outside income and expenses into the individual's decision. The Total Future Income Stream equation could assist the Naval Officer in dealing with the ramifications of an early or postponed

retirement. They recommended that retirees should look beyond the financial aspect of retiring, and understand the difficulties associated with the transition to civilian life. Additionally, they argued that retirees need to study the current economic situation before exiting the military. In the end,

the officer must project his own individuality into the retirement decision. Accordingly, he must consider his own goals, ideals, values, personality and ability when considering the implications of the analysis of this thesis. What is important to him must modify his interpretation of any and all situations.

(Berkebile and Gaudi, p. 92)

3. Study by Gotz and McCall (1979)

In a response to the greatly increasing manpower costs during the mid-1970s, the Rand Corporation conducted a study on retirement behavior of Air Force Officers. Gotz and McCall tested the then current retirement system against two substitute retirement systems (proposed in *The Uniformed Services Retirement Modernization Act* and *The President's Commission on Military Compensation*), both cheaper than the one in place, that were in the process of being reviewed by Department of Defense and the Ford Administration. They used data gathered from actual "Air Force personnel records on promotion, augmentation, military compensation, military pension, retirement probabilities and civilian wages." (Gotz and McCall, p. 10)

Gotz and McCall focused on the behavior of field-grade officers and tried to predict their actions under the three different retirement plans through their *Dynamic Retirement*

Model. For the base model, they "calculated the present value and decision for the [base] officer facing the mean Air Force career path and the mean civilian wage path for retired military personnel." (Gotz and McCall, p. 10) They utilized a discount rate of 10% for the calculations for the base model and considered the individual officer to be risk-neutral. For the other two retirement programs (RMA and CMC), Gotz and McCall introduced a Cost of Leaving factor into the model along with the reduced pension to calculate the behavior of a risk-averse officer. The findings for *The Uniformed Services Retirement Modernization Act* and *The President's Commission on Military Compensation* indicated that along with a significant reduction in retirement wages and a delay of payments until the age of 60, the risk-averse officer would be compelled to serve the maximum 30 years of service due to a high cost of leaving the service.

The findings for the base model indicated that the current retirement plan persuades officers to remain past their tenth year of service until retirement. For example, according to the study "the optimal retention policy for majors - optimal in the sense of maximizing expected present value (reserve and regular) - is to stay until they complete twenty years of service and then retire." (Gotz and McCall, p. 13) The optimal point occurs for Lieutenant Colonels are at 23 years of service and for Colonels at 26 years of service. Gotz and McCall discovered that "departures increase as civilian earnings rise." (Gotz and McCall, p. 15) Depending on the pay grade, Air Force Officers retired early as a response to higher civilian wages as they outpaced military pay.

4. Study by Ford (1992)

In 1989 the Soviet Union collapsed and the Department of Defense initiated a force structure drawdown to reduce manpower costs. Three years later, Ford conducted a survey at the Naval Postgraduate School to investigate the factors that influenced separation and retirement decisions for Lieutenant Commanders. Her survey focused on three different voluntary separation plans offered during the drawdown: the Special Separation Benefit (release from active duty with a lump sum payment and no retirement benefits), the Voluntary Separation Incentive (release from active duty with an immediate annuity and no benefits), and the 15-Year Retirement Plan (retire at 15 years with full benefits including health coverage, and a retirement plan similar to the 20-year retirement plan). Ford hypothesized that "tenure, spousal influence, career intent, pecuniary motivation, non-pecuniary separation benefits, involuntary separation, and civilian job opportunities" carry weight in the decision of Naval Officers to either separate or remain until eligible for full retirement. (Ford, p. 11)

With a sample size of 83 out of 137 Lieutenant Commanders (61% of the population responded to the survey), Ford ran a multivariate regression of the survey data to predict the separation or retirement behavior of Lieutenant Commanders. Results indicated that if faced with a forced separation, many Naval Officers would choose the 15-Year Retirement Plan with full benefits; very few of them would consider the SSB or VSI. All of the surveyed officers looked forward to remaining in the United States Navy until

the 20-year retirement eligibility point. High tenure and spousal support had a positive effect on retention until 20 years.

Overall, Ford discovered that these Naval Officers "are a career-oriented group who, unless pressured to separate due to a reduction in force or failure to promote, plan to remain in the Navy at least until eligible for a 20-year retirement" and that "if the drawdown requires reduction of this career officer force, nothing short of an early retirement plan with full benefits would be perceived as adequate compensation." (Ford, p. 55-56) Additionally, Naval Officers perceived healthcare to be the greatest non-pecuniary benefit that encourages them to remain until retirement.

III. METHODOLOGY AND ANALYSIS

A. METHODOLOGY

The literature review points out many of the factors and traits that influence retention. Due to the limitations of the data set (cognitive traits, performance traits, and career traits were not provided in the data set), this thesis will examine a career Marine Officer entering the retirement phase through exploratory data analysis. The hypothesis is that Prior-enlisted Marine Officers retire at a higher rate than non-prior Marine Officers once they encounter pay compression. Since Marine Officers with at least eight years of service encounter the pay compression near 20 years of service, they are more likely to retire at a higher rate than Marine Officers without prior service (a "non-prior") at that point.

B. DATA DESCRIPTION

The data used in this study comes from a longitudinal (officer master cohort) data file maintained by the Defense Manpower Data Center. The data file contained 15,372 Marine Officers who served in any of the years from FY1980 to FY 2006. This information is unclassified and does not contain the individuals' social security numbers. The Defense Manpower Data Center provided a unique identifier code for each Marine Officer in compliance with the Privacy Act.

The data did not contain a "prior-enlisted indicator" that satisfied the criteria for this study (at least 4 years of prior-enlisted service to be eligible for special base

pay). The author created prior-enlisted indicators for the length of service by using the difference between an individual's Pay Entry Base Date and his or her Date of Commission (Officer Appointment Date). The variables used in this study are shown in Table 4.

Table 4. Variable Description

Variable	Variable Name	Data Type	Description Label
STAY/LEAVE	STAY_5	float	=1 Stay if 5 Years of Service or more; =0 otherwise
	STAY_6	float	=1 Stay if 6 Years of Service or more; =0 otherwise
	STAY_7	float	=1 Stay if 7 Years of Service or more; =0 otherwise
	STAY_8	float	=1 Stay if 8 Years of Service or more; =0 otherwise
	STAY_9	float	=1 Stay if 9 Years of Service or more; =0 otherwise
	STAY_10	float	=1 Stay if 10 Years of Service or more; =0 otherwise
	STAY_11	float	=1 Stay if 11 Years of Service or more; =0 otherwise
	STAY_12	float	=1 Stay if 12 Years of Service or more; =0 otherwise
	STAY_13	float	=1 Stay if 13 Years of Service or more; =0 otherwise
	STAY_14	float	=1 Stay if 14 Years of Service or more; =0 otherwise
	STAY_15	float	=1 Stay if 15 Years of Service or more; =0 otherwise
	STAY_16	float	=1 Stay if 16 Years of Service or more; =0 otherwise
	STAY_17	float	=1 Stay if 17 Years of Service or more; =0 otherwise
	STAY_18	float	=1 Stay if 18 Years of Service or more; =0 otherwise
	STAY_19	float	=1 Stay if 19 Years of Service or more; =0 otherwise
	STAY_20	float	=1 Stay if 20 Years of Service or more; =0 otherwise
	STAY_22	float	=1 Stay if 22 Years of Service or more; =0 otherwise
	STAY_23	float	=1 Stay if 23 Years of Service or more; =0 otherwise
	STAY_24	float	=1 Stay if 24 Years of Service or more; =0 otherwise
	STAY_26	float	=1 Stay if 26 Years of Service or more; =0 otherwise
	STAY_30	float	=1 Stay if 30 Years of Service or more; =0 otherwise
Prior Enlisted Experience	PriorEnlis~4yos	float	=1 if MO was Prior-Enlisted for at least 4 Years or more; =0 otherwise
	PriorEnlis~8yos	float	=1 if MO was Prior-Enlisted for at least 8 Years or more; =0 otherwise
	PriorEnlis~10yos	float	=1 if MO was Prior-Enlisted for at least 10 Years or more; =0 otherwise
	Non_PriorMO	float	=1 if MO was never enlisted or had less than 4 years of prior enlisted service; =0 otherwise

C. COMPARATIVE DESCRIPTIVE STATISTICS

A preliminary analysis of the data indicated that a majority of the Marine Officers within the sample ($n=15,372$), mostly non-priors, left the Corps after their initial service obligation. Out of all 15,372 Marine Officers, 877 remained until retirement. Retirement restrictions were used for loss reason codes of deaths (battle/non-battle related), courts-martial, unacceptable behavior, and permanent disabled retirements. Overall, only 15 Marine Officers out of the whole population remained on active duty past 26 years of service and two Marine Officers made it to a full 30 years of service. A deeper look at the data reveals the rate at which Mustang and non-prior Marine Officers stayed past 20 years of service.

Table 5. Non-prior Marine Officers vs. Prior-enlisted Marine Officers with +4 years of prior service at 20YOS

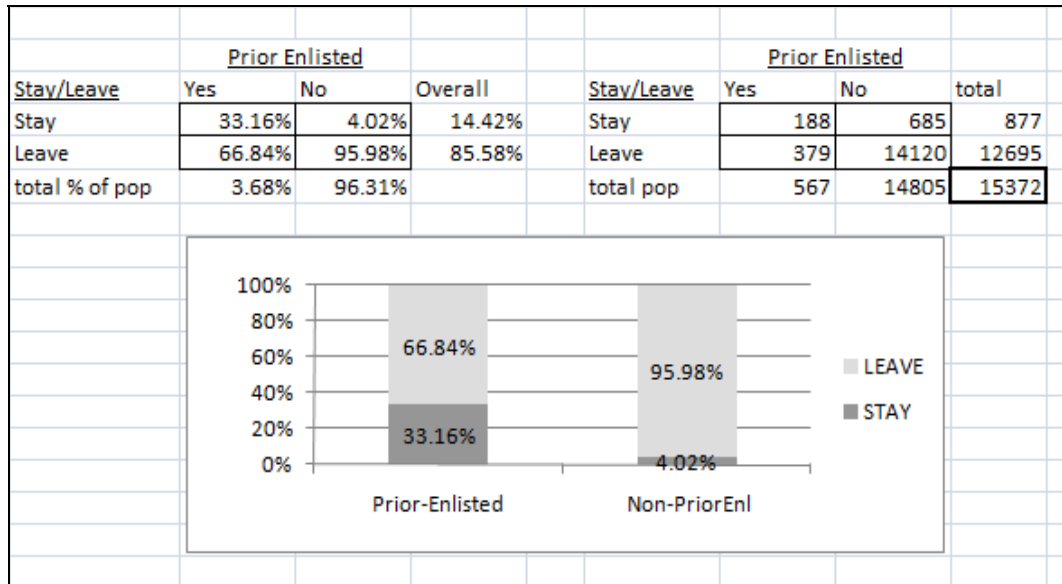


Table 5 points out the ratio of Marine Officers (non-priors and prior-enlisted) that stayed until 20 years of service. Only 14.4% of the original population remained until the point when they were eligible for military retirement; and the rest of the officers voluntarily departed the Corps before reaching 20 years of service. Of the prior-enlisted Marine Officers with at least four years of prior-enlisted service, 33.2% stayed until 20 years of service.

Table 6. Non-prior Marine Officers vs. Prior-enlisted Marine Officers with +8 years of prior service at 20YOS and +10 years of prior service at 20YOS

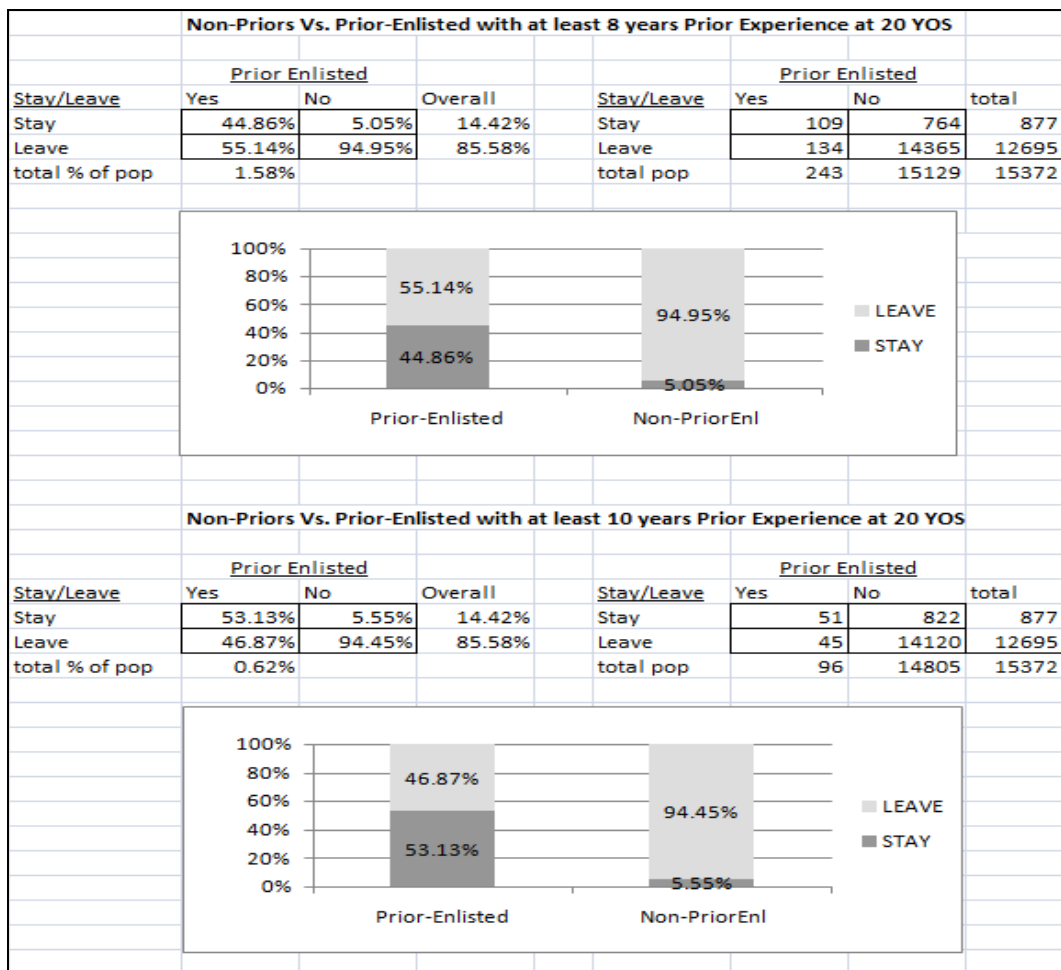
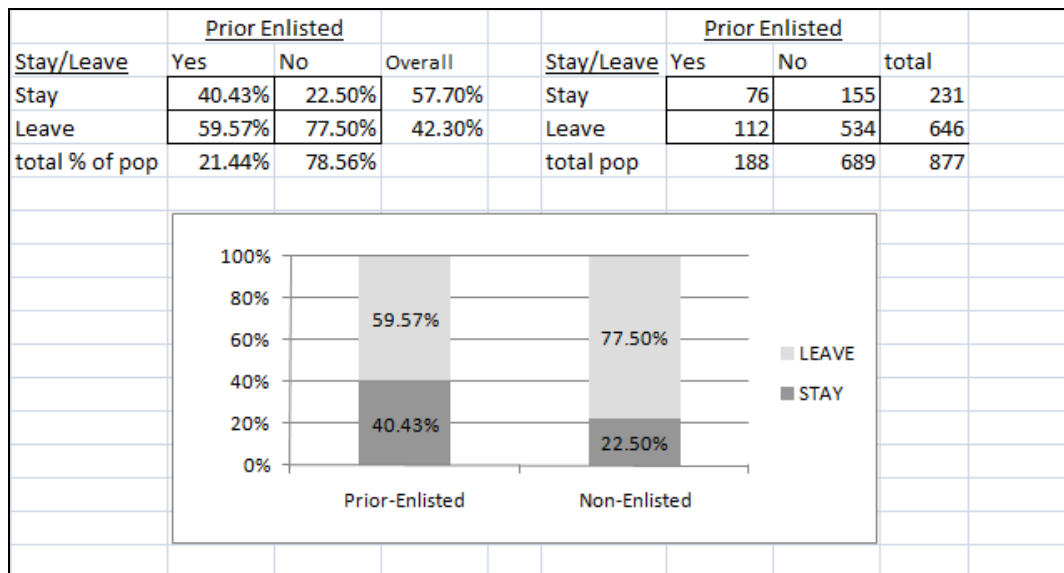


Table 6 shows that prior-enlisted Marine Officers with at least eight years of service remained at a rate of 44.9% and those with at least ten years stayed at an even higher rate of 53.1% respectively. The data indicates that as the number of years of prior enlisted service increase, so does the commitment to serving 20 years of service. Quite possibly this shows the attractiveness of the military retirement system and benefits, and the desire for those who have more vested time in the Marine Corps to make it a career.

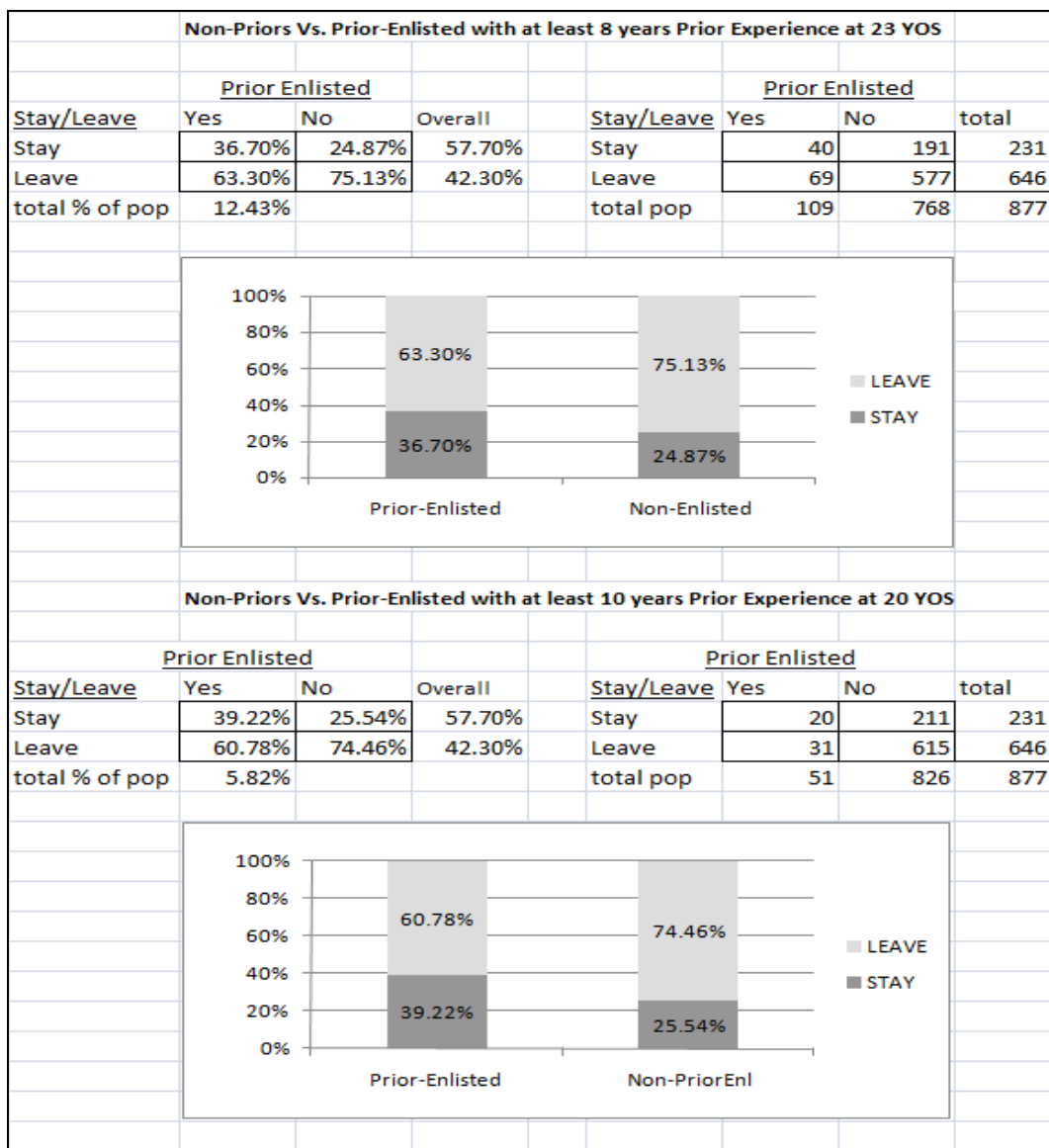
Table 7. Non-prior Marine Officers vs. Prior-enlisted Marine Officers with +4 years of prior service at 23YOS



After accounting for Marine Officers who departed the Corps before 20 years of service, the remaining population of retirees is examined in order to determine the rate at which individuals chose to remain once they attained retirement eligibility. Out of 877 retirees, 689 were non-

prior Marine Officers and 188 Marine Officers were prior enlisted with at least 4 years of service. According to Table 7, for the Marine Officers who stayed past 23 years of service, prior-enlisted Marines remained at a higher rate of 40.4% than non-priors, whose rate was of 22.5%.

Table 8. Non-prior Marine Officers vs. Prior-enlisted Marine Officers with +8 years of prior service at 23YOS and with +10 years of prior service at 23YOS



At 23 YOS, the commitment rate decreases for Marines with more enlisted service time; yet, both tables indicate that prior-enlisted Marine Officers have a higher rate of retirement.

Table 9. Non-prior Marine Officers vs. Prior-enlisted Marine Officers with +4, +8, +10 years of prior service at 26YOS

Non-Priors Vs. Prior-Enlisted with at least 4 years Prior Experience at 26 YOS							
Stay/Leave	Prior Enlisted				Stay/Leave	Prior Enlisted	
	Yes	No	Overall			Yes	No
Stay	4.26%	0.73%	1.48%		Stay	8	5
Leave	95.74%	99.27%	98.52%		Leave	180	684
total % of pop	21.44%	78.56%			total pop	188	689
Non-Priors Vs. Prior-Enlisted with at least 8 years Prior Experience at 26 YOS							
Stay/Leave	Prior Enlisted				Stay/Leave	Prior Enlisted	
	Yes	No	Overall			Yes	No
Stay	6.42%	0.78%	1.48%		Stay	7	6
Leave	93.58%	99.22%	98.52%		Leave	102	762
total % of pop	12.43%				total pop	109	768
Non-Priors Vs. Prior-Enlisted with at least 10 years Prior Experience at 20 YOS							
Stay/Leave	Prior Enlisted				Stay/Leave	Prior Enlisted	
	Yes	No	Overall			Yes	No
Stay	5.88%	1.21%	1.48%		Stay	3	10
Leave	94.12%	98.79%	98.52%		Leave	48	816
total % of pop	5.82%				total pop	51	826

At 26 years of service, very few Marine Officers voluntarily continue their service in the corps. Only 13 Marine Officers out of the entire officer cohort ($n=15,372$), regardless of prior enlisted service or not, had a length of service beyond 26 years. Due to the small number of Marine Officers, no analysis past 26 years of service was conducted.

D. EXPLORATORY DATA ANALYSIS

This study uses exploratory data analysis (EDA) to examine the data and compare the conditional and unconditional continuation rates at which prior-enlisted and non-prior Marine Officers remained in the Corps.

1. Unconditional Method

This method is used to measure the continuation rate for both prior-enlisted Marine Officers and non-prior Marine Officers for a full 30 years of service. By plotting a graph using the following formulas this study attempts to track the behavior of Marine Officers. The unconditional formula uses ratios between the numbers of Marine Officers in a group who had "stayed" at a point in time against the overall population of that group and compares that ratio to that of the other group.

For non-prior Marine Officers:

$$\text{At Time} = k, \frac{[\# \text{ non-prior alive at time } k]}{[\# \text{ non-prior in the data}]}$$

For Prior-enlisted Marine Officers:

$$\text{At Time} = k, \frac{[\# \text{ prior alive at time } k]}{[\# \text{ prior in the data}]}$$

Figure 1. Unconditional Continuation Rate for Non-prior Marine Officers vs. Prior-enlisted Marine Officers At least 4yrs of Prior Service

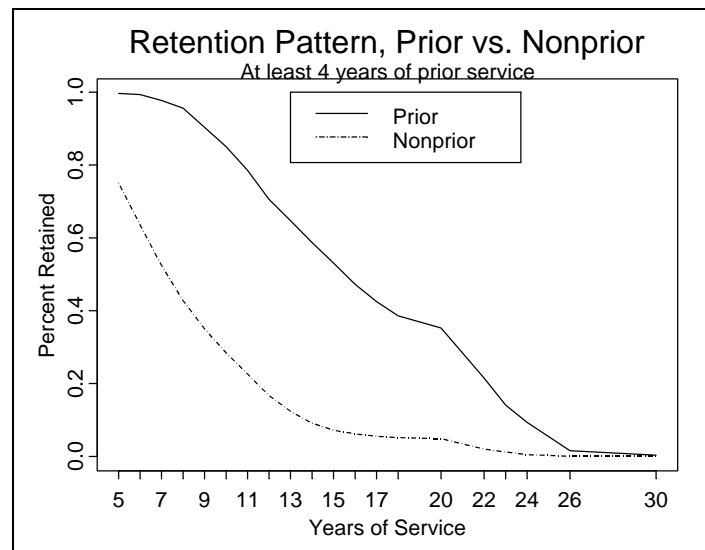
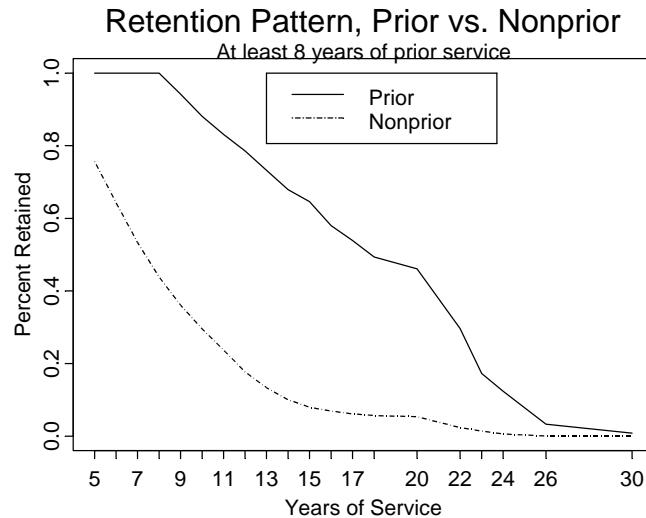


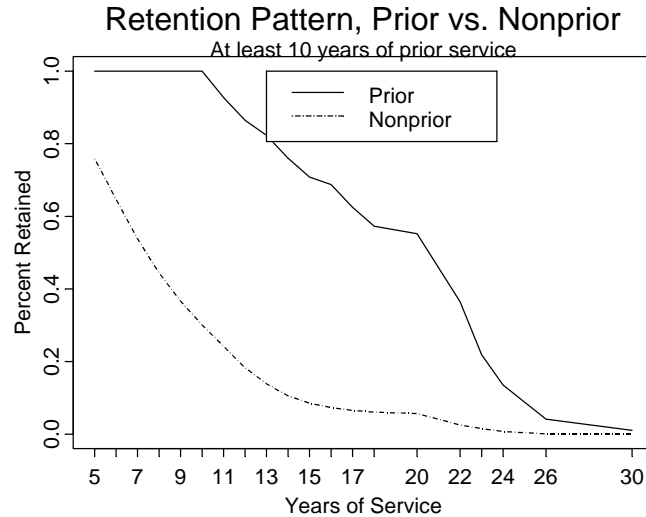
Figure 1 data shows that prior-enlisted Marines have a higher retention rate than non-prior Marine Officers. The rates at which the two groups decrease from nine years to 16 years are similar; yet, at 16 YOS the non-prior group's retention rate stops decreasing up until the year 20 and at 18 YOS the prior-enlisted Marine Officers' rate stops decreasing as fast up until year 20. After 20 years of service, prior-enlisted Marines start leaving at a higher rate. There is no distinction between the groups after 26 years of service.

Figure 2. Unconditional Continuation Rate for Non-prior Marine Officers vs. Prior-enlisted Marine Officers At least +8yrs of Prior Service



The retention patterns for prior-enlisted Marine Officers (both +8 and +10 years of prior service) in Figures 2 and 3 respectively follow the same retention pattern as Figure 1 up until year 20. After meeting retirement eligibility (at 20 YOS), prior-enlisted Marine Officers in Figure 2 and 3 retire at a faster rate than non-priors.

Figure 3. Unconditional Continuation Rate for Non-prior Marine Officers vs. Prior-enlisted Marine Officers with At least +10yrs of Prior Service



2. Conditional Method

The unconditional method used the overall population. This makes it difficult to visualize differences between groups in the later years. To get a better assessment of the officers' behavior, the following conditional formula computes the ratio between the numbers of Marine Officers who had "stayed" at a point in time against the population alive for the previous year and compares that ratio across groups.

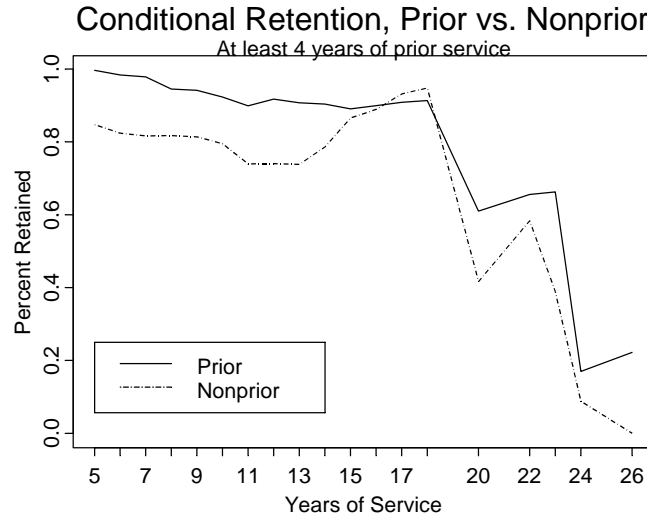
For non-prior Marine Officers:

$$\text{At Time} = k, \frac{[\# \text{ non-prior alive at time } k]}{[\# \text{ non-prior alive at time } k]}$$

For Prior-enlisted Marine Officers:

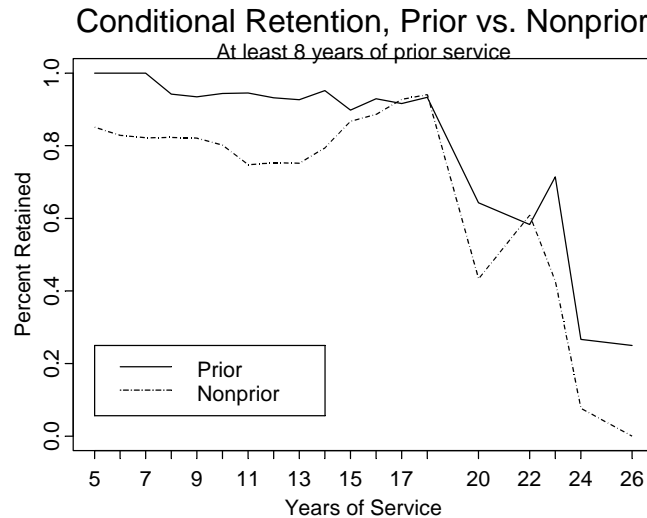
$$\text{At Time} = k, \frac{[\# \text{ prior alive at time } k]}{[\# \text{ prior alive at time } k]}$$

Figure 4. Conditional Continuation Rate for Non-prior Marine Officers vs. Prior-enlisted Marine Officers with At least 4yrs of Prior Service



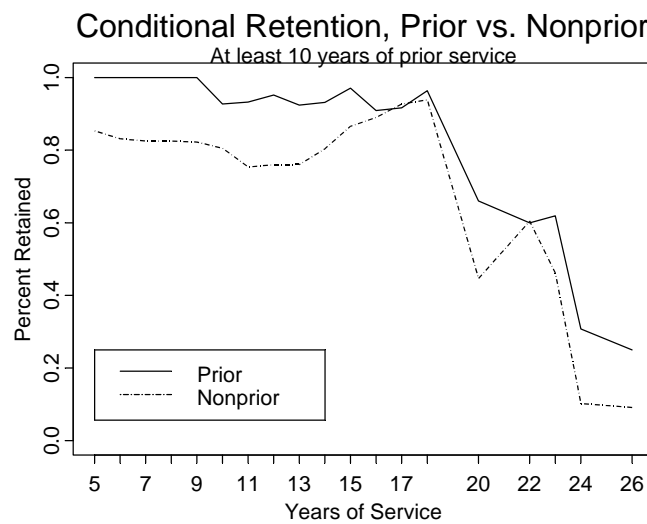
Although the differences in Figure 4 are clearly larger at the beginning, the gap between the two groups decreases to a point, around 17 YOS, where there is no distinction at all. Though not surprising, the non-priors' conditional continuation rate gets higher presumably because they are a few years away from retirement and there are no incentives to get out at 17 or 18 YOS. For all Marine Officers, a big increase in continuation rate occurs immediately after year 20. One plausible theory for the spike is that Marine Officers promoted near the 20-year mark remain for at least three years' time in grade to retire at the highest rank held and to maximize their income.

Figure 5. Conditional Continuation Rate for Non-prior Marine Officers vs. Prior-enlisted Marine Officers with At least 8 years of Prior Service



Figures 5 and 6 also show the difference between the two groups that occurred at the start dissipates near 17 YOS. However, there is a distinction between the behavior of non-priors and prior-enlisted Marine Officers at around year 20. The conditional continuation rate increased for non-prior Marine Officers, whereas the rate of continuation for Mustang Marines decreased within the 20 to 22 YOS period. Since the numbers in these groups are small, this could be due to random chance, or perhaps those individuals tracking for retirement envisioned their career to end at 20 YOS or shortly thereafter. Maybe those Marine Officers who figured that their future Marine Officer career prospects to be few and opted to retire to seek another career. Nevertheless, the continuation rates for both groups are similar after 23 YOS and no causal effect can be determined from the data.

Figure 6. Conditional Continuation Rate for Non-prior Marine Officers vs. Prior-enlisted Marine Officers with At least 10 years of Prior Service



IV. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

The results of this study suggest that Mustang or prior-enlisted officers with at least 8 or more years of service do not retire at the same rate as regular officers. In fact, prior-enlisted Marine Officers retire at a higher rate than non-priors. Coincidentally, this occurs as the Prior-enlisted Marines encounter the pay cap. Although a correlation exists, the research did not show a causal relation from an analysis of the data that explains the behavior. Evidence as to whether the capped pay scale influences Marine Officers to retire after 20 years of service remains inconclusive from this data analysis.

Undoubtedly, individuals choose to "stay" or "leave" after 20 YOS based on different motivations and personal reasons. Presumably, individuals decide to absolutely and unequivocally depart the corps after 20 YOS once they become eligible for retirement benefits. Arguably, the drop in manpower at 20 YOS is not as drastic as it might be due to other personal choices and policy mandates, such as (1) the recent promotees - those Marine Officers promoted at around 20 YOS who decide to remain for three years' time in grade to retire at the highest rank held and maximize their income and (2) the holdouts - those Marine Officers who hold out until the next promotion board and who if not promoted with their peers, then voluntarily retire before being forced to do so. Although other factors like the availability of the

Career Status Bonus/REDUX retirement plan could play a role, it was not apparent in the data.

The data does show that Prior-enlisted Marine Officers behave differently from non-priors. They are more likely to remain on active duty after their initial service obligation and serve a full career in the Marine Corps than Marine Officers with no previous military experience. Prior-enlisted service has a positive effect on retention up until 20 YOS.

B. RECOMMENDATIONS

1. It is recommended that the Marine Corps take the behavior of Prior-enlisted Marine Officers into account for future considerations and perhaps study the expansion of the Special Pay Schedule to include prior-enlisted Majors (O-4E) and Lieutenant Colonels (O-5E) without a pay cap. Removal of the pay cap could encourage quality prior-enlisted Marine Officers to stay past 20 years of service until service limitation (High Tenure) or the "up or out" policy comes into effect. By eliminating a dissatisfier, the Marine Corps would no longer be promoting field-grade officers from a truncated pool of candidates for promotion, and could build a more robust officer corps through the retention of quality prior-enlisted Marine Officers.

2. It is recommended that additional data fields that attribute commission source and military experience including "prior-enlisted" indicators, "total enlisted time in service" (in months or years), and a marker for military retirement plans be collected. An indication for retirement plans could assist a future study into the behavior of

Marine Officers under the two different retirement plans, High-three and the CSB/REDUX retirement plan, and ascertain if either retirement influences retention past 20 YOS. Furthermore, the source of commissioning data field did not point out if the Marine was commissioned through an enlisted commissioning program (MECEP/ECP/MCP). An additional indicator alongside other sources of commissioning such as the United States Naval Academy (USNA), Naval Reserve Officer Training Corps (NROTC), and Officer Candidate Course and Platoon Leadership Course (OCS/PLC) would be an advantage to researching the effects that prior enlisted experience has on Marine Officer retention.

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LIST OF REFERENCES

- Berkebile, D.F., Gaudi, R.D. (June 1976) *The Question of Retirement: An Examination of the Factors Relevant to the Retirement Decision of the Individual Naval Officer*. Master's Thesis, Naval Postgraduate School, Monterey, CA.
- Branigan, G.A. (March 2001) *The Effect of Graduate Education on the Retention and Promotion of Marine Corps Officers*. Master's Thesis, Naval Postgraduate School, Monterey, CA.
- Cakmak, Y. (March 2004) *The Value of the 1999 USMC Retention Survey in Explaining the Factors that Influence Marine's Subsequent Stay/Leave Behavior*. Master's Thesis, Naval Postgraduate School, Monterey, CA.
- Ford, J.P. (June 1992) *Voluntary Separation and Early Retirement Plans: A Survey of Naval Postgraduate School Lieutenant Commanders*. Master's Thesis, Naval Postgraduate School, Monterey, CA.
- Gaudet, F.J. (1960) *Labor Turnover: Calculation and Cost*, American Management Association Inc., New York, NY.
- Gotz, G.A., McCall, J.J. (October 1979) *A Sequential Analysis of the Air Force Officer's Retirement Decision*, Rand, Santa Monica, CA.
- Ingham, G.K., (1970) *Size of Industrial Organization and Worker Behaviour*, Cambridge Papers in Sociology, Number 1, Cambridge University Press, UK
- Lawler III, E.E., Worley, C.G. (2006) *Built to Change: How to Achieve Sustained Organizational Effectiveness*, Jossey-Bass, San Francisco, CA.
- Lenz, A.J. (May 1967) *Voluntary Separation and Early Retirement Plans: A Survey of Naval Postgraduate School Lieutenant Commanders*. Doctoral Dissertation, Stanford University, Palo Alto, CA.

- MarAdmin 187/07. (March 2007) *FY 2009 U.S. Marine Corps Officer Promotion Selection Boards*, Marine Administrative Message, Headquarters United States Marine Corps, Washington, D.C.
- McShane, S.L., Von Glinow, M.A. (2007) *Organizational Behavior [Essentials]*, McGraw-Hill/Irwin Press, New York, NY.
- Mowday, R.T., Porter, L.W., Steers, R.M. (1982) *Employee-Organization Linkages: The Psychology of Commitment, Absenteeism, and Turnover*, Academic Press, New York, NY.
- O'Brien, W.E. (June 2002) *The Effect of Marine Corps Enlisted Commissioning Programs on Officer Retention*. Master's Thesis, Naval Postgraduate School, Monterey, CA.
- Perry, T.A. (March 2006) *An Analysis of Primary Military Occupational Specialties on Retention and Promotion of Mid-Grade Officers in the U.S. Marine Corps*. Master's Thesis, Naval Postgraduate School, Monterey, CA
- Price, J.L. (1982) *The Study of Turnover*, The Iowa State University Press, Ames, IA.
- Shanahan, F.M. (1983) *A Test of Two Conceptual Models of Job Turnover*, Doctoral Dissertation, Texas Christian University, Ft Worth, TX.
- Tiffin, J., McCormick, E.J. (1965) *Industrial Psychology*, Prentice-Hall Inc., Englewood Cliffs, NJ.
- Theilmann, R.J. (September 1990) *An Analysis of the Factors Affecting Marine Corps Officer Retention*. Master's Thesis, Naval Postgraduate School, Monterey, CA.
- Zinner, M.A. (March 1997) *U.S. Marine Corps Company-Grade Officer Retention*. Master's Thesis, Naval Postgraduate School, Monterey, CA.

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